

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 July 2001 (26.07.2001)

PCT

(10) International Publication Number
WO 01/53970 A2

(51) International Patent Classification⁷: **G06F 17/00**

(21) International Application Number: PCT/IB01/00268

(22) International Filing Date: 24 January 2001 (24.01.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/177,355 24 January 2000 (24.01.2000) US

(71) Applicant (for all designated States except US): **NEURONIA LTD.** [IL/IL]; Rival Street 7, 67778 Tel-Aviv (IL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GEVA, Ori** [IL/IL]; Neuron Ltd., Rival Street 7, 67778 Tel-Aviv (IL). **ISH-HURWITZ, Shai** [IL/IL]; Neuron Ltd., Rival Street 7, 67778 Tel-Aviv (IL). **HOCHBERG, Assaf** [IL/IL]; Neuron Ltd., Rival Street 7, 67778 Tel-Aviv (IL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GI, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A SYSTEM AND METHOD FOR MATCHING REQUESTS FOR INFORMATION WITH SOURCES THEREOF

(57) Abstract: A platform for mass information exchange by building a content rich virtual community that enables information to be exchanged by matching information seekers with information sources within a chat oriented environment. More specifically, a user searching for specific information is matched with a person who can provide the information or with an automated information channel. The user inputs a query into the system wherein the query is parsed and compared to a database of profiles defining a person or automated information channel as a source of information. When a match is made between a query and a source, the query is transmitted to the identified source. The source then provides a response to the query to the user. The system allows users to reach realms of personal knowledge repositories never before available by accessing the knowledge contained in another's mind, not merely the knowledge physically placed on the Internet.

WO 01/53970 A2

A SYSTEM AND METHOD FOR MATCHING REQUESTS FOR INFORMATION WITH SOURCES THEREOF

The present Application claims priority from the co-pending U.S.
5 Provisional Patent Application Serial No. 60/177,355, the contents of
which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an information retrieval system
10 and more specifically to a system that provides an exchange of
information between a person who posts a request and a person who
can respond to the request.

2. Description of Related Art

The Internet revolutionized the way information is exchanged by
15 making resources and information instantly available. The World Wide
Web, or the web, is the Internet's multimedia information retrieval
system and is the most common method of transferring data in the
Internet environment. People all over the world are turning to the
Internet to access, locate and exchange information. A person with a
20 computer and a software system referred to as a "browser" can
connect the computer to the Internet, usually via a telephone line, and
with the aid of the browser, access various Web pages. The web is
made up of an infinite number of webpages that display text, graphics,

images sounds and video using a standard page description language known as Hypertext Markup Language ("HTML"). HTML provides basic document formatting and allows a developer to specify "links" to other servers, webpages and files. The linking of webpages and web resources together has turned the Internet into a seemingly boundless repository of information. Uncovering the exact piece of information needed by a user, however, has proven to be a dauntless and sometimes frustrating task.

The use of a search engine is one of the most common ways to locate information on the Internet. A search engine is a program that searches documents and/or webpages, located on the Internet, for specified keywords and returns a list of the documents that contain text matching the entered keywords. Examples of a web-based search engine include Alta Vista, Excite and Yahoo, wherein each engine enables users to search for documents on the web.

To access information using a search engine, a user inputs a query into a text box located on the search engine application interface. A query is simply a request or search for information. Conventional queries that enable information to be retrieved from files, servers and now the Internet consist of Boolean queries, query by example, query language (such as SQL), relational queries and structural queries. A major draw back of using the above query methods is that the user

must develop specialized skill in formatting a query in order for the query to return the information the user is searching for. For example, a Boolean query requires a user to understand Boolean logic, i.e.: OR, AND, NOT, AND NOT, in order to formulate a correct query.

5 Furthermore, the quality of the query or search is often dependent on the skill and vocabulary of the user. Even with such a mastery, it is difficult to properly anticipate the exact words that will trigger the proper document or webpage to be retrieved.

Once a user inputs a query, the search engine works by sending

10 out a spider to retrieve as many documents related to the query as possible. Another program, called an indexer reads the documents and creates an index based on the words contained in each document. Each search engine then uses a proprietary algorithm to create indices such that, ideally, only meaningful results are returned for each

15 submitted query. Search engines therefore present one of the most efficient, yet frustrating, ways to access the information contained on the Internet. Furthermore, information retrieval is limited to the information that is directly placed on the Internet. In other words, unless the subject matter relevant to the user's input is contained in a

20 webpage, file or server on the Internet, then the user's request will be returned without any results. Thus, it would be preferable to provide users with a system that enables information to be retrieved from the

Internet and beyond the Internet in an efficient and easy to use manner that does not require the user to master a query skill in order to retrieve such information.

Another feature that offers users a means for retrieving
5 information are web based chat rooms, bulletin boards and Internet
created groups, often referred to as "communities." Internet based
communities allow users to interact with a myriad of people having
varied interests and backgrounds. Communities often require that the
user subscribe to the community in order to access its features. Not
10 surprisingly, communities typically are focussed on particular subject
matters, so that the general topic of conversation can be known by
users prior to entering a chat room. For example, the topic of
discussion in one chat room might be concerts, whereas the topic of
discussion in another chat room might be "teen singers". Still another
15 topic of discussion might be the National Football League ("NFL"). A
user, however, may spend a significant amount of time randomly
accessing different communities in search of a community that
matches his interests. Similarly, a user may have to chat with
numerous other users before he finds someone with similar interests.
20 Thus, it would be preferable to provide users with a system that
connects users, in an efficient and quick manner, with other users that
have similar interests

SUMMARY OF THE INVENTION

The present invention provides a platform for mass information exchange by building a content rich virtual community that that enables information to be exchanged by matching information seekers with
5 information sources within a chat oriented environment.

The present invention solves the above mentioned problems by providing a system that matches a seeker of information with a source of information. In short, a user searching for specific information is matched with a person who can provide the information. Thus, the
10 user receives a response directly from another person. The system thereby allows users to reach realms of personal knowledge repositories never before available by accessing the knowledge contained in another mind, not merely the knowledge physically placed on the Internet. The system of the present invention can also be used
15 to share opinions, beliefs and ideas thereby creating an entire global community.

In one embodiment of the present invention, the system is implemented on the Internet thus having an interface wherein a user, in search of information, may enter a natural language query. A natural
20 language query enables a user to search for information using plain language thereby eliminating the need for users to master conventional query techniques. A natural language query can be in the form of a

question or general comment. An example of a natural language query is as follows: a user may research computers by simply entering this as a query: "What is the best computer to buy?"

5 Once the query is entered, the system of the present invention matches the query to a source of information contained in the database. A source of information is an individual who registers with the system of the present invention thus creating a profile that highlights the individual's areas of knowledge and expertise. By creating such a profile, the individual is defining himself as a source of
10 information.

To create a profile using the system of the present invention, the individual first selects a general category such as "sports." The individual may then enter any specific knowledgeable area he may possess relating to sports. For example, the individual may select
15 football and then enter Denver Broncos as a specialty. The individual of the present example would thus be considered a source of information pertaining to sports, particularly football and the Denver Broncos, as indicated by the individual's profile.

The profiles for each source of information are housed in a
20 database contained in the system of the present invention. When a user enters a query, the database matches the query with the source of information who's profile best matches the subject matter of the query.

For example, if a user enters the following query "Who won the Super Bowl in 1998?," the query will be parsed into keywords and the keywords will then be matched with the profiles contained in the database by comparing the query's keywords with the knowledgeable areas contained in a source of information's profile.

The system of the present invention may use a number of techniques to analyze the user's query. For example a sophisticated array of neural networks, NLP engines and semantic matching analyzers may be utilized to match the user's query with the most appropriate individual registered as a source of information.

Continuing with the above example, the system of the present invention will match the keyword Super Bowl with the predefined categories in the database such as "sports." Preferably, the keyword will further be matched to the specific keywords in a source of information's profile such as "football" or "Denver Broncos." Once the system of the present invention has located each source of information who may be able to respond to the user's query (or question in this instance), the system will forward the user's question to the individual associated with the matching profile. Therefore, the user's question "Who won the Super Bowl in 1998?" will be sent to the individual who indicated sports, football and Denver Bronco's as a knowledgeable area.

Once the individual identified as the appropriate source of information receives the question, the individual will answer the question. A notice informing the user that his question has been answered is then sent to the user. The user may then access the web site interface in order to read the answer from the individual identified as the source of information.

In another embodiment of the present invention, more than one individual may be identified as a source of information. For example, the system may determine that there are numerous individuals who may possibly be able to respond to the user's inquiry as to "Who won the Super Bowl in 1998?," thus the system may forward the question to each individual identified as a source of information.

The system of the present invention may also include a rating system for answers given by the individual who is identified as a source of information. The rating system is meant to identify the accuracy and efficiency of the answer given by the each source of information thus ensuring the integrity of the information exchange system.

In an embodiment of the present invention, the user's query in the form of a comment, request or question may be matched against a set of previous answers or responses given by individuals identified as sources of information. The system of the present invention further includes a database that houses all answers or responses formulated

by sources of information in response to a users inquiry. Therefore, a user's inquiry that may be general in type can be matched against the database of previous response to determine whether the inquiry has already been address in conjunction with a prior question. If a match is found, the stored response will be transmitted to the new inquirer thus maximizing all answers formulated by the sources of information. If a match is not found, the user's inquiry will be matched against the profiles of individuals to best ascertain who would be the most accurate source of information to address the inquiry, as described above.

10 In another embodiment of the present invention, the system of the present invention allows a user to choose to answer questions that other people have posted. In other words, an individual user identified as a source of information may opt to have the system send him any and all questions relevant to their interests or expertise on the spot.

15 For example, a user may send the following question to the system, "Ask me about country music?," the system of the present invention will instantly send the above source of information any recently submitted question that relates to the requested topic (i.e.: a question related to country music).

20 In another embodiment of the present invention, the system for matching an information seeker with an information source is a web based community that connects people together by matching keywords

from a user's input to similar areas of interest specified by registered individuals. The present invention therefore solves the above identified problem by offering advanced matching technologies that connect members with other members by matching their profiles and listed preferences thereby reducing the amount of time a person may spend on the Internet searching for chat rooms, bulletin boards or even individuals that have similar interests. The system of the present invention may thus be viewed as a virtual community wherein members and even non-members can be matched with others having similar interests.

In yet another embodiment of the present invention, the system for matching information seekers with information sources may be implemented via numerous application such as the Internet, short service messaging ("SMS") and wireless application protocol ("WAP"). Via proprietary matching technology of the present invention, users can post and respond to each other's comments and questions using wireless devices.

Objects, features and advantages of this invention is to provide a system for matching people having a requests, comments or questions with people who can respond to such a request, comment or question. The system of the present invention also creates a virtual community wherein users may ask questions and get responses from

other people. The system allows people to gain access to information even if that information is not physically located on a medium thereby enabling users to tap into repository of knowledge never before available. Further objects, features and advantages of the invention will become apparent from a consideration of the following description and the appended claims when taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The above aspects of the present invention will become more apparent by describing in detail embodiments thereof with reference to the attached drawings, in which:

FIG. 1 is a block diagram of a computer system that is capable of implementing the present invention;

FIG. 2 is a block diagram of a preferred embodiment of the hardware architecture implemented in the matching system of the present invention;

FIG. 3 is block diagram of a preferred embodiment of the software architecture implemented in the system of the present invention;

FIGS. 4 is a screen shot of the Internet interface of the present invention;

FIG. 5 is a screen shot of an Internet interface of the present invention showing how an individual creates a profile as a source of information by entering areas of knowledge;

5 FIG. 6 is a screen shot of an Internet interface of the present invention illustrating an example of how an individual creates a source of information profile;

FIG. 7 is screen shot of an Internet interface illustrating the interface of a subscriber's account;

10 FIG. 8 is a flow chart illustrating the user and source of information registration process for the system of the present invention;

FIG. 9 is a flow chart illustrating how a query or question is posted using the system of the present invention;

FIG. 10 is a flow chart depicting the matching process utilized by the system of the present invention;

15 FIG. 11 is a matrix chart illustrating the matching process of the present invention; and

FIG. 12 is a flow chart illustrating how a posted question is answered using the present invention.

20 DETAILED DESCRIPTION OF THE INVENTION

Hereinafter, embodiments of the present invention will be described in detail with reference to the attached drawings. The

present invention is not restricted to the following embodiments, and many variations are possible within the spirit and scope of the present invention. The embodiments of the present invention are provided in order to more completely explain the present invention to one skilled in the art.

Definitions

One embodiment of this invention resides in a computer system. Here, the term "computer system" is to be understood to include at least a memory and a processor. In general, the memory will store, at one time or another, at least portions of an executable program code, and the processor will execute one or more of the instructions included in that executable program code. It will be appreciated that the term "executable program code" and the term "software" mean substantially the same thing for the purposes of this description. It is not necessary to the practice of this invention that the memory and the processor be physically located in the same place. That is to say, it is foreseen that the processor and the memory might be in different physical pieces of equipment or even in geographically distinct locations.

Computer program products

The above-identified invention may be embodied in a computer program product, as will now be explained.

On a practical level, the software that enables the computer system to perform the operations described further below in detail, may be supplied on any one of a variety of media. Furthermore, the actual implementation of the approach and operations of the invention are
5 actually statements written in a programming language. Such programming language statements, when executed by a computer, cause the computer to act in accordance with the particular content of the statements. Furthermore, the software that enables a computer system to act in accordance with the invention may be provided in any
10 number of forms including, but not limited to, original source code, assembly code, object code, machine language, compressed or encrypted versions of the foregoing, and any and all equivalents.

One of skill in the art will appreciate that "media", or "computer-readable media", as used here, may include a diskette, a tape, a
15 compact disc, an integrated circuit, a ROM, a CD, a cartridge, a remote transmission via a communications circuit, or any other similar medium useable by computers. For example, to supply software for enabling a computer system to operate in accordance with the invention, the supplier might provide a diskette or might transmit the software in some
20 form via satellite transmission, via a direct telephone link, or via the Internet. Thus, the term, "computer readable medium" is intended to

include all of the foregoing and any other medium by which software may be provided to a computer.

Although the enabling software might be "written on" a diskette, "stored in" an integrated circuit, or "carried over" a communications
5 circuit, it will be appreciated that, for the purposes of this application, the computer usable medium will be referred to as "bearing" the software. Thus, the term "bearing" is intended to encompass the above and all equivalent ways in which software is associated with a computer usable medium.

10 For the sake of simplicity, therefore, the term "program product" is thus used to refer to a computer useable medium, as defined above, which bears in any form of software to enable a computer system to operate according to the above-identified invention.

Thus, the invention is also embodied in a program product
15 bearing software which enables a computer to perform * according to the invention.

User interfaces

The invention is also embodied in a user interface invocable by an application program. A user interface may be understood to mean
20 any hardware, software, or combination of hardware and software that allows a user to interact with a computer system. For the purposes of

this discussion, a user interface will be understood to include one or more user interface objects. User interface objects may include display regions, user activatable regions, and the like.

5 As is well understood, a display region is a region of a user interface which displays information to the user. A user activatable region is a region of a user interface, such as a button or a menu, which allows the user to take some action with respect to the user interface.

A user interface may be invoked by an application program.
10 When an application program invokes a user interface, it is typically for the purpose of interacting with a user. It is not necessary, however, for the purposes of this invention, that an actual user ever interact with the user interface. It is also not necessary, for the purposes of this invention, that the interaction with the user interface be performed by
15 an actual user. That is to say, it is foreseen that the user interface may have interaction with another program, such as a program created using macro programming language statements that simulate the actions of a user with respect to the user interface.

Applications programs

An application program may be several separate programs, only one program, a module of a program, or even a particular task of a module.

5 An applications program may be written by an applications programmer. Applications programmers develop applications programs using any of a number of programming languages. During development and design of applications programs, applications programmers may adhere to a programming methodology. A
10 programming methodology is a set of principles by which analysis is performed and by which design decisions are made. Programming methodologies may be referred to as programming paradigms. Examples of widely-known programming paradigms include the top-down, the data-driven, and the object oriented (OO) programming
15 paradigms.

The object model

The OO paradigm is based on the object model. One of skill in the art readily understands the object model. For detailed information concerning the object model, a useful book, which herein is
20 incorporated in its entirety by reference, is "Object-oriented Analysis and Design", by Grady Booch (Addison-Wesley Publishing Company).

Recently, object oriented analysis and design (OOAD) and object oriented programming (OOP) have been the focus of great attention. OOAD and OOP are thought to provide advantages with respect to abstraction, encapsulation, modularity, and hierarchy. Furthermore, OOAD is thought to provide for improved software reuse and better adaptability to change.

According to the object model, a software system is modeled as collections of cooperating objects. Individual objects are treated as instances of a particular class. Each class has a place within a hierarchy of classes.

An object is understood to have a unique identity, to have a state, and to exhibit behavior. The behavior of an object relates to the set of operations that may be performed by the object. Such operations are also known, interchangeably, as methods of the object or as member functions of the object. Member functions of an object are invoked by passing the object an appropriate message.

An object may retain data of interest. Passing the object appropriate messages may invoke a member function of the object to manipulate the data. For example, an object presently might retain an image of the Washington Monument, and might have a member function for rotating an image. Under the object model, when an appropriate message, such as "rotate image 45 degrees", is passed to

the object the rotating member function is invoked and the image is rotated 45 degrees. The image, thus rotated, is retained in this state.

The invoking of member functions of objects to perform tasks is a central concept of the OO paradigm.

5 Objects can be related to each other. Two objects might have a client/supplier relationship. Such objects are said to be linked. Two objects might have a hierarchical relationship. For example, one object might represent a finger and another a hand. The hand object may thus be said to be higher in a hierarchy than the finger. Assuming the
10 hand has more than one finger, there might be several finger objects that are so related with the hand object. Hierarchically related objects are said to be aggregated. In particular, the hand object and its finger objects may be referred to as an aggregate, or an aggregation. The
15 finger objects may be referred to as being attributes, or members of the aggregation. The hand object, by virtue of its position at the "top" of the hierarchy in the aggregation, may be referred to as an aggregating object.

 An object cannot be considered without regard to its class. Every object, when constructed, receives its structure and behavior
20 from its class. An object may be referred to as a class instance, or as an instance of a class. Classes, in the object model, may be hierarchically related. In particular, the relationship between two

classes may be a subclass/superclass relationship. A subclass may inherit the structural and behavioral features of its superclass.

Thus, whenever an object is constructed, it receives important attributes from its class. If that class is a subclass of a particular superclass, the object may receive certain attributes from the superclass as well.

Class libraries

Classes, on a practical level, may be supplied in class libraries on any one of a variety of media. Class libraries may be understood to be a kind of software. Thus, the class definitions contained in class libraries also are actually statements written in a programming language that, when executed by a computer, cause the computer to act in accordance with the particular content of the statements. Furthermore, a class library may be provided in any number of forms including, but not limited to, original source code, assembly code, object code, machine language, compressed or encrypted versions of the foregoing, and any and all computer readable equivalents.

One of skill in the art will therefore appreciate that a class library may be embodied in a computer program product as that term has already been defined, above.

The invention

Having explained the meaning of various terms, the invention will now be described in detail. Referring now to FIG 1, a block diagram of a host computer system (1) that is capable of implementing the system of the present invention is shown. Host computer system (1) may be a desktop or portable computer, a workstation, a server, a personal digital assistant, or any other computer system. Host computer system (1) preferably includes a central processing unit ("CPU") (2) such as a conventional microprocessor, a read-only memory ("ROM") (4), a random access memory ("RAM") (6), an input/output ("I/O") adapter (8) for connecting peripheral devices such as disk drives (10), a user interface adapter interface adapter (12) for connecting input devices such as a keyboard (14), a mouse (16), a touch screen (18), a voice keyboard (20) and or other devices (22) to a system bus (24). Communications adapter (26) connects the host computer system (1) to a network (28) and a display adapter (30) connects system bus (24) to a display device (32).

FIG. 2 illustrates a preferred embodiment of the system for matching information seekers with information sources according to the present invention. A plurality of clients servers (not pictured) and the servers of the present invention (36) are coupled to the Internet (39) via

an Ethernet communication platform (40). An optional firewall (42) contains software to protect sensitive information

Clients servers can interact with the system of the present invention using numerous types of gateways. A client server may
5 interact with the system of the present invention from the Web or through a WAP gateway to the Web, or from other gateways. For example, an SMS user may interact with the Short Message Service Center ("SMSC") of his carrier having a connection to the system of the present invention. This connection can be also implemented via a Web
10 interface (using HTTP protocol) or via a dedicated line between the carrier and the servers of the present invention.

Referring now to FIG. 3 a block diagram illustrating a preferred embodiment of the software architecture of the present invention is shown. The software architecture of the present invention is based on
15 four layers of software and hardware components. The access layer (70) describes the means by which a user can access the system application and services. A user may gain access to the system of the present invention via SMS (72), a web browser (73), instant messaging (74), WAP (75), voice recognition devices (76), call generator devices
20 (77) and location based system devices (78). Of course, any other device or method that may allow a user to post and receive and request and/or response falls within the scope of the invention.

The application layer (80), on the other hand, describes the functions and features of the system available to a user. In general, a user may take advantage of numerous system features including: WHQuestion Core (82), The Matcher(83), OutLoud (84), Favorites (85) and YAK (86), each of which will be described in detail. It is important to note that these are exemplary feature, thus the scope of the present invention should not be limited to these features. Any feature that uses the spirit of the present invention and can be implement using the system disclosed herein are within the scope of the present invention.

As depicted, third party applications (89) can be developed using standard interface mechanisms and implemented in conjunction with the present invention. The applications of the present invention include: a website (82) that provides users with the ability to ask and answer questions using a web browser over the Internet, wherein users have personal pages showcasing the questions they have asked and the answers they have received, a matching application (83) that enables matching between people with similar interest or allows a posted question to be matched with the source of information that may best be able to answer the question. Other features offered by the system of the present invention include; a vast database of user answers and user questions. Thus, when a user asks a question that is similar to a question previously asked, the "Outloud" application (84)

can retrieve the answer to the original questions from a database and thus relaying the answer to the user. By indexing previously asked questions and the corresponding answers, answers can be made immediately available to other members of the community inherently
5 created by the system of the present invention.

The Favorites feature (85) is actually an extension of the virtual community embodiment of the present invention that allows members of the community to keep track of their favorite members (i.e.: a "buddy list") to ease communication access between users. For instance, if a
10 user enters a question and received a good response from a person, the user may maintain a dialog between himself and the person providing the response. In other words, the user will be able to directly contact the persons included in his favorites list at any time concerning any subject. Thus, the user may add the person to his favorites list
15 thereby enabling direct contact to be made with the person in the future.

The YAK feature (86), on the other hand, is also a derivative of the virtual community embodiment of the present invention. Specifically, the YAK feature (86) is a community platform designed for
20 teens. Generally, this feature tailors the information matching system of the present invention towards teenagers thus the semantic

application and categorization (as will be described below) is adapted for teens interests.

The Matcher feature (83) is an application that enables a user to find a person within the community. For example, a user may submit the following request: "I want to talk to a 16 years old girl from France that loves to ride horses." Instead of receiving an "answer" to the request, the matcher feature determined which registered users have similar interests as defined by their profiles and attempts to introduce the two users having similar interests to one another. As can be seen, by "introducing" user's to one another, the system of the present invention provides a virtual community to the users that is not limited to a question and answer session.

The engine layer (90) includes the linguistic and matching engines of the system that enables a user to enter a natural language query and receive an accurate answer. The matching and linguistic analysis will be more fully described below, however, the matching of an information seeker with an information source is of course inherently dependent on the database (105). The database (105) houses profiles of individuals who have identified specific areas of knowledge and thus define themselves as sources of information. The database (105) and its creation will be fully addressed below.

Other applications found in engine layer (90) include: interaction (91), matching (92), user and profile tools (93), sharing (94), loyalty systems (95) and activity logging (96), each of which will be briefly described below.

5 The Interaction application (90) is the software component that handles the interactions between users activity such as questions, answers, commenting/chat and rating. The software component enables interaction independent of the user device, thus a user operating the system via SMS message, for instance, can seamlessly
10 interact with a Web user or a WAP user or another SMS user.

 The Matching application (92) is described in great detail below. Generally, the Matching application (92) provides analytical tools for parsing user input into elements that are compared to stored profiles thus enabling a seeker of information to be matched with a source of
15 information.

 The User & Profile Tools application (93) handles all information and activities that are related to the user, the user's status, activity, knowledge profile, the user interface personalization and other miscellaneous features.

20 The Sharing application (94) is the engine component that enables the sharing of information stored and collected in the system databases. Thus, a user who asks a question that was already

answered can immediately get an answer from the database. The software application "OutLoud" (84) uses this engine component.

The Loyalty System application (95) tracks user activity and performance in the system thus enabling the user to be rewarded for his contribution to the community and his quality answers.

The Activity Logging application (96) tracks every activity in the system and logs such information into a system databases thereby creating a raw database for other component to use (such as the matching engine and the loyalty system). Lastly, an administrative layer (100) is provided wherein system of the present invention can be monitored for various purposes such as customer support, technical maintenance and content moderation.

In FIG. 4 a screen shot of the Internet interface of the system of the present invention is shown. The webpage (110) can be accessed by entering the proper address in the uniform resource locator ("URL") (112). As can be seen, the webpage (110) offers numerous features to the viewer. For example, a viewer may select the "new user" icon (114) wherein the viewer can register as a user with the system of the present invention. By registering as a user, the user will be assigned a personal page that can be accessed at any time. The user will also be able to create a profile highlighting their personal interests and expertise thus defining themselves as a source of information. It is

important to note, however, that a viewer is not required to register as a user in order to use the system of the present invention. The user registration process and source registration process will be further defined below.

5 If the viewer is already a registered user, the viewer may select the "registered user" icon (116) wherein the viewer will be required to enter a username and password in order to access the system. Once the viewer has been verified as a user, the user's personal page will be displayed.

10 In order to initiate the information matching system of the present invention, a user enters a query, question or general comment into text box (118). and then selects the ask icon (120). The details concerning the analysis of the question and matching the question to an individual who can best respond to the inquiry will be described in
15 detail below.

 Turning now to FIG 5 and FIG 6, a screen shot displaying the areas of knowledge to be selected and enter by a user who is registering as a source of information is depicted. In order to be considered a source of information, a user must select areas of
20 knowledge for which the user feels as though he could supply answers. The knowledgeable area drop boxes (122a) allow a user to specify a general category of knowledge or interest. Upon selecting a general

category, the user can refine their area of knowledge using drop box (122b) and text box (122c).

FIG. 6 provides an exemplary embodiment of how a profile is created thus defining an individual as a source of information. For example, a person creating a profile begins by selecting a general category from drop box (122a) such as "Computers & Internet." By moving to the drop box (122b) located to the right of drop box (122a), a user may further refine their area of expertise. By pulling down drop box (122b) the user will be presented with numerous subcategories under the general topic "Computers & Internet". As can be seen from the example, the user may further refine their expertise to "design." Lastly, a user may further refine their area of expertise by entering a keyword. For example, the exemplary user defined their computer design expertise as being within the programming language C++. By defining and refining areas of knowledge and expertise, a user creates a profile that defines them as a source of information. Here, the individual is a source of information concerning computers and the internet, computer design and C++. Thus, a query entered by a user seeking information on how to write a program may be matched to the exemplary individual as a source of information. The query will then be forwarded to the individual identified as a source of information thus allowing the individual to directly answer the user's question. FIG 5.

further depicts a text box (123) that allows a user to enter information concerning their interest, expertise or general comment in paragraph form.

Referring now to FIG. 7, a registered user's personal page is illustrated. The user's personal page offers the user a text box (118) for asking questions. It should be noted that an unregistered user can ask or answer a question using the system of the present invention, however, the user will be prompted to register in order to post the question. From the user's personal page, a user may create a profile (126) thus defining the user as a source of information concerning topics to be selected by the user. A user may also keep track of points (128) awarded for providing quick and accurate answers to other user's questions. Furthermore, the personal page shows whether the user has any questions (130) that he/she can answer as a source of information. Answers to questions asked by the user are also accessible from the user's personal page (132). When a user posts a question using the system of the present invention, the user will be able to view the answers (132) they receive in response to the question from their personal page.

Upon viewing the answer provided by the source of information, the user will be presented with a opportunity to rate, on line, the quality of the response given by the source of information. The rating system

enables users to research the history and quality of the source of information's responses thus ensuring the accuracy of the system that matches information seekers with information sources.

Referring now to FIG. 8, a flow chart of the registration process for the system of the present invention is shown. When a viewer decides to become a registered user of the system, the viewer must select the "new user" icon (114) as depicted in FIG. 4. By selecting the icon, the viewer will be presented with a registration page. The viewer begins by entering basic details (S140) concerning himself such as name, email address, home address, etc. Next, the user will be given an opportunity to create a profile (S142) highlighting his areas of interest and knowledge. When the viewer creates a profile he is, in essence, defining himself as a source of information.

To create a profile, the viewer may enter specific information concerning his interests, educational history, profession, location or places of travel, hobbies, categories and keywords, language proficiencies and other knowledge domains he may possess.

Once a viewer completes his profile, the viewer will further be able to define preferences (S144) as a source of information. For example, a viewer may define how many times a week he would be interested in answering questions or he may define what types of questions can be sent to him directly.

Upon completion of the registration process, the viewer selects enter to complete the registration process (S146) and thus becomes a register user and source of information. It is, of course, possible for a viewer to simply register as a user without taking the opportunity to complete a profile. In this case, the viewer would be a registered user
5 but would not be considered a source of information.

In FIG. 9, a flow chart depicting the process for asking a question using the system of the present invention is shown. As shown in FIG. 5, a user enters input (S148) in the form of a query, question or
10 general comment into the text box (118) displayed on the webpage (110). To further refine the question, the user has the option of adding keywords (S150) to the input or specify a specific location (S152) to assist the system in determining the best source of information.

A user may also optionally add constraints (S151) to refine the
15 matching process by limiting the sources population. Example of such constraints include source properties, such as: rating, response time, knowledge profile, demographic details etc. For example, a user may include the following constraint on a request in order to narrow the sources searched by the system of the present invention: "answers
20 only from sources who live in Texas and have at least "4-stars" rating."

Upon submitting the question, the system optionally displays potential source categories, location and other items (S154) in an

attempt to further refine the user's question thus assisting the system in determining who best will be able to address the user's question. The system parses the input into keywords, compares the input keywords to predefined general categories that may be relevant to the user's question. The user is then presented with a list of potential source categories generated by the system wherein the user may optionally select the source categories (S156) they believe will be of most help in answering the question. For example, if a user entered the following question "Who won the Super Bowl in 1998?," the system will parse the question into keywords such as "super bowl" and "1998". The system will then match the keywords to an array of predefined categories stored within the system. The categories that appear to be relevant to the keywords of the user's question will then be presented to the user for selection thus assisting the system in determining who would be the best source of information to answer the user's question.

For example, the above user may be presented with the following categories in relation to the question "Who won the Super Bowl in 1998?:" "Sports," Football, and " History." The user may then select which categories are the best match for the question. The user may optionally enter the location (S158) in a further attempt refine the question in order to assist the system in determining who will best address the user's input. Upon completion of defining the question, the

user submits the question (S160) to the system of the present invention.

FIGS. 10 and 11 will be addressed in conjunction with one another. FIG. 10 depicts the matching process used by the present invention while FIG. 11 is a matrix illustrating the matching system of the present invention. Thus, referring to FIG. 10, when a user submits a request, the question is immediately analyzed in order to determine the sources of information best qualified to respond to the request. Numerous analytical tools are used to analyze the request such as: heuristics, linguistic analysis, semantic analysis and proprietary graphs of words and locations. Each analysis application uniquely parses the user's request into manageable elements to ease the matching process.

The analysis applications begins by identifying the question pattern in order to determine whether or not the question can be answered by an automated response (S180). An automated response is an answer to a question that has been previously asked. The system of the present invention stores all requests from users and responses from sources of information thus enabling the system to extract automated responses when a request is repeatedly asked.

Furthermore, the automated response engine (S180) "grabs" questions posted to the community of the present invention and

provides an automated answer from an existing content channel. For example, if a user asks: "What is the weather in London tomorrow?" the automated response engine identifies the question as a "weather forecast" question, and sends a query (<location>,<date>) to the appropriate automated information channel (for example, Yahoo! Weather service). An answer is provided by the automated information channel and sent the user. Questions that are not "grabbed" by the automated response engine (S180)(WHmachine™) are transmitted to the matching engine (S181) to begin the matching process.

10 The semantic extraction application (S181) extracts the semantic essence of the user's phrase, question or request. In order to determine the essence of the phrase, the semantic extraction application (S181) begins by identifying the language in which the phrase is drafted. Next, the phrase is dissected or filtered wherein the semantic extraction application (S181) tags phrase elements and eliminates noise words thus leaving the "semantic essence" of the phrase. Such filtering is accomplished using proprietary techniques including but not limited to the following: tagging-assisted stripping, statistical stripping and neural-network based stripping. If a user, for example, enters the following request: "Who won the Super Bowl in 1998?," the semantic extraction process would begin by eliminating noise words such as "who", "the," and "in." Furthermore, the semantic

tools would most likely tag the following as phrase elements "won," "Super Bowl" and "1998."

The matching system of the present invention then submits the phrase elements identified during the semantic analysis process to a categorization step (S182). During the categorization process (S182), the system associates the phrase elements with a predefined hierarchical tree of categories. Numerous techniques, known to those of ordinary skill in the art, are used to associate each phrase element with a predefined category including: graph algorithms, various inference heuristics and contextual expansion. Continuing with the above example, the hierarchical tree of the present example may include, for example, the following categories: "trivia," "sports," "weather," "fashion" and "NFL." The phrase elements "won," "Super Bowl" and "1998" would most likely be associated with the following categories: "sports," "NFL" and "trivia." By associating each phrase element with a particular category, the matching process will be expedited.

Once the phrase has been properly categorized (S182), categories in which the phrase elements were placed are submitted to an expansion process (S184). The expansion process (S184) expands the extracted query text, the keywords and the categories into a more meaningful set of words and terms thus creating word sets or category

sets. In other words, the expansion process enlarges the possible set of words that may be associated with the category. Although the expansion process can be performed using many techniques, grammatical expansion and keyword expansion are used in the preferred embodiments of the present invention.

Grammatical expansion acts as a thesaurus by finding synonyms for the phrase elements extracted from the user's request during the semantic process (S180). For example, if the user is searching for information concerning jogging, the grammatical expansion process may enlarge the set of possible word matches to include: running, exercising, and racing. Expanding the set of words and terms associated with the phrase element helps assure that all potential sources of information will be matched to the user's request. Continuing with the above example, a grammatical expansion may develop this possible word set in relation to the term "football:" "NFL," "Sports" and "Football (American)."

Keyword expansion performs the same underlying function as grammatical expansion. However, the keyword expansion process simply creates a larger group of keywords or terms that may possibly match the user's request. . Keyword expansion is performed based on categorized text corpuses. A categorized text corpus is a collection of documents wherein each document is associated with a set of

keywords. For example, if the user requested information concerning programming languages, the keyword expansion process may identify additional associated keywords such as C++, Perl and Java, thus increasing the potential matches in relation to the user's request.

5 The matching process (S186) is initiated upon completion of the expansion process (S184). The matching process is basically a series of search queries performed on the profiles contained in the database and the user's past activity database. To facilitate the matching process, the profiles contained in the database are indexed before the
10 profiles are submitted to search requests.

 The matrix provided in FIG. 11 illustrates how the matching process is performed. As can be seen from FIG. 11, the vertical column (the "profile column") (184) represents a source of information's profile wherein the profile is dissected into categories in order to
15 facilitate the matching process. Specifically, the profile column (184) includes but is not limited to the following groups: profile categories, profile description, past answers, profile locations and user demographics. Of course, numerous categories can be added to the matrix rows and columns in order to incorporate more information and
20 establish a more comprehensive and focused search, thus the scope of the present invention should not be limited to these exemplary categories.

As explained above, profile categories are the hierarchical categories associated with a profile element defined by the source of information. For example, if the an individual defines himself as a sports fan and in particular a Washington Redskins fan, his profile categories may include "sports" and "teams". Utilizing categories simplifies the matching process by grouping profiles having similarities together under a common heading thus enabling matches to be accomplished in a short period of time..

The profile description group is simply the description an individual enters describing himself upon registering as a source of information. The past answers group, as previously defined, is a collection of prior answers wherein if the question is repeated, the system of the present invention can automatically dispatch the previous answer thereby ensuring an efficient and fast system.

The profiles location group simply contains profiles organized by locations specified by an individual when registering as a source of information. Lastly, the user demographics group stores information concerning the users of the system including but not limited to age and gender.

The longitudinal row of the matrix ("the query row") (187) depicts the type of term to be used when performing the query in relation to the categories defined in the profile column (184). The query terms include

but are not limited to: query text, categories, filtered terms, expanded terms and location. The numerous terms related to a single query are matched against each predefined profile groups. Various matching techniques are utilized by the present invention including: parallel search streams, multiple criteria, keyword weighing, and parameterized control. For example, the multiple criteria method compares the word/category sets to the source profiles and more specifically to the keywords, open descriptions and indicate locations contained within a source profile.

As can be seen from FIG 11, the matrix ensures that every possibility for matching a term to an individuals' profile thus matching an information seeker with an information source is exploited by searching the intersection of each row and column for a specified keyword. For example, the system of the present invention searches for a match between the keyword "Super Bowl" and the profiles contained in the database. Namely, the matching process will begin in the A1 cell of the matrices wherein the actual query term filtered from the user's question is matched against the profile categories. If a match is made, the system will forward the user's question to the source of information associate with the matching profile. The matching process will continue performing searches among the intersecting cells of the matrices. For example, when the matching

process encounters cell B4 the expansion terms will be matched against the information contained in the profile descriptions. In this case, the matching process may be searching or attempting to match numerous terms as a result of the functional step of the expansion process. Thus, the matching process may be searching for a profile description that pertains to football, sports, NFL or football (American). As results are returned, the results from each cell searching process are aggregated together and ranked using heuristic and weighing rules.

It is not mandatory to search every cell in the matrix in order to match an information seeker with an information source. Performing an all inclusive search of each matrix cell during each matching process would be inefficient. Therefore, only the cells that are relevant to the query at hand will be searched. For example, when attempting to match a query concerning the Denver Broncos with a source of information, the system of the present invention will perform its search within the matrix cells that include information or categories relevant to the Denver Broncos. Thus, a cell including information about gardening and the opera will not be searched in this particular instance.

When the system locates a match between the word/category sets and the information contained in source profiles, the dispatching process (S188) constructs a list of the source of information whose profile matched the word/category sets. The dispatching process

(S188) then analyzes each source of information's preferences regarding responding to requests. As explained above, when an individual registers as a source of information, the individual can preference constraints associated with the individuals willingness to respond to user requests such as: a number limit on referrals, time constraints and uniform distribution. Thus, the dispatching process (S188) takes these constraints into account before dispatching the user's request to the source of information.

Turning now to FIG. 12, a flow chart illustrating the process of answering a request using the system of the present invention is shown. When a match is obtained between a user's request and a information source's profile, the system of the present invention forwards the user's question to the individual identified as a source who could possible respond to the user's question. The source of information may either receive the request as an email, an SMS or on the source's person webpage. After reading the request (S190), the source of information will determine whether the request is clear (S192). If the source needs further clarification to accurately respond to the user's request, the source may contact the user (S193), (S194) (S195) via email, SMS or over the system website. If the user is contacted, the user has the option of evaluating the source (S198) of information by accessing the source's profile and response rating. If

the user determines that the source may provide an accurate response, the user will answer the source's request for clarification (S194).

5 Once the source of information fully understands the user's request, the source can choose whether or not he will provide a response. Thus, the source can decline the user's request (S200a) or accept the user's request (S200b). Upon deciding to respond to the user's request, the source of information creates a wrapper (S202) by accepting the respond icon. The wrapper (S202) stores the answer
10 and relevant information concerning the answer such as: time of posting, the source of the answer and the source of the question thus enabling the system to keep record of all requests and responses.

 The source of information enters a response (S204) in regards to the user's request. The source of information may also attach
15 additional information (S206) to the response as needed. The response is then posted (S208) upon completion. Depending on the user's preference, the response to the request will be returned to the user via email, SMS or over the user's personal webpage. It is important to note that the user may also contact the source for any
20 clarification needed concerning the response (S210).

 Upon receipt of the response from the source of information, the user is requested to rate the source of information's response,

efficiency and accuracy in order to ensure the integrity of the system. Furthermore, the user may access the source of information's profile in order to learn about the individual behind the source of information.

As can be readily seen from the above description, the system of the present invention inherently creates a virtual community between users. Thus, it is important to note that the system of the present invention should not be limited to a question and answer environment. Instead, the system can be used to create virtual friendship by locating user's with similar interest. The perks and advantages of the system are thus boundless.

Additionally, the system of the present invention can be implemented in numerous forms as described above. Preferred embodiments of the present invention include the Internet and wireless application devices. The above described system can be implemented via WAP or SMS. Thus, the system would feature a variety of solutions for gaining access to information using for example, voice mail, text to speech, text messaging for wireless devices, fax rendering and SMS. The system uses various methods of data entry using wireless devices including: Speech to text, point and click, shortwritings, keyboard and keypad entry. Hence the system of the present invention can be implemented on a wide scale of mobile and web technologies ranging

from the simplest SMS messages to the complexity of WAP and Web interfaces.

What is claimed is:

- 1 1. A system for matching an information seeker with an
2 information source comprising:
3 an input interface for allowing a user to input desired
4 information;
5 a database coupled to said input interface, said database
6 containing a plurality of information sources;
7 a matching mechanism for matching said user input with at least
8 one of said information sources;
9 an input delivery mechanism for delivering said user input to
10 said information source that best matches said user input;
11 an answer delivery mechanism adopted for delivering a
12 response to said user input from said best matched information
13 source.
14

- 1 2. The system for matching an information seeker with an
2 information source of claim, 1 wherein said database comprises a
3 plurality of source profiles, each said source profile indicating at least
4 one knowledgeable area of a source, thus enabling said source to be
5 matched with said user input.

6

1 3. The system for matching an information seeker with an
2 information source of claim, 1 wherein said database comprises a
3 plurality of automated information channels, each said automated
4 information channel having at least one keyword, thus enabling said
5 automated information source to be matched with said user input.

1 4. The system for matching an information seeker with an
2 information source of claim 2, wherein said information source is at
3 least one of a person with a certain knowledgeable area that matches
4 said user input and an automated information channel that matches
5 said user input.

1 5. The system for matching an information seeker with an
2 information source of claim 2, wherein said source profile contains
3 knowledgeable areas of said source, said knowledgeable areas
4 including at least one of: professional skills, location, interest
5 descriptions, interest domains and languages.

1 6. The system for matching an information seeker with an
2 information source of claim 1, wherein said user input is in the form of a
3 question.

1 7. The system for matching an information seeker with an
2 information source of claim 1, wherein said user receives a response
3 from said information source identified as having a profile that matches
4 said users input.

1 8. The system for matching an information seeker with an
2 information source of claim 1, wherein said database stores a plurality
3 of previously delivered responses.

1 9. The system for matching an information seeker with an
2 information source of claim 8, wherein said matching mechanism
3 matches said user input with at least one of said previously delivered
4 responses and said answer delivery mechanism delivers said
5 previously delivered response to said user.

1 10. The system for matching an information seeker with an
2 information source of claim 1, further comprising a weighting

3 mechanism for ranking a plurality of information sources in a
4 hierarchical manner when each of said plurality of information sources
5 provides a response to said user input.

1 11. The system for matching an information seeker with an
2 information source of claim 1, wherein said matching mechanism is
3 further operable to:

4 accepting said desired information input by said user;
5 parsing said query into at least one phrase element;
6 categorizing said phrase element into at least one category
7 using a predefined hierarchical tree of categories;

8 expanding said phrase element and said category into a broader
9 set of words, thus creating a word set, by associating said phrase
10 element and said category with a plurality of synonym phrases and
11 categories;

12 performing a series of search queries wherein at least one of
13 said phrase element, category, and word set are compared to a
14 plurality of words contained in an indexed database; and

15 returning a result when at least one of said phrase element,
16 category or word set matches a word contained in said indexed
17 database.

1 12. The system for matching an information seeker with an
2 information source of claim 1, wherein said input interface, said input
3 delivery mechanism and said answer delivery mechanism is operable
4 through at least one of an Internet and a wireless device.

1 13. A system for retrieving information relevant to a query
2 comprising:
3 a client application through which a user can input a query;
4 a database coupled to said client application, said database
5 containing at least one source of information, said source of
6 information having a profile defining at least one knowledgeable area of
7 said source of information; and
8 a search engine for searching said source of information profile
9 for a match wherein when a query input by said user is matched to said
10 knowledgeable area defined in a profile of said source of information
11 profile, said source of information is prompted to provide said user with
12 a response.

1 14. The system for retrieving information relevant to a query
2 of claim 13, wherein said source of information is an automated
3 information channel.

1 15. The system for retrieving information relevant to a query
2 of claim 13, wherein said query is in the form of a question.

1 16. The system for retrieving information relevant to a query
2 of claim 13, wherein upon obtaining a match between said query and
3 an automated information channel, said automated information channel
4 provides a response to said query.

1 17. The system for retrieving information relevant to a query
2 of claim 13, wherein upon obtaining a match between said query and
3 said source of information, said source of information is prompted with
4 said query so that a person identified as said source of information can
5 respond to said query.

1 18. The system for retrieving information relevant to a query
2 of claim 17, wherein said person has at least one knowledgeable area
3 wherein said knowledgeable areas including at least one of:
4 professional skills, location, interest descriptions, interest domains and
5 languages.

1 19. The system for retrieving information relevant to a query
2 of claim 13, wherein said client application, said database and said
3 search engine are operable through an Internet.

1 20. The system for retrieving information relevant to a query
2 of claim 13, wherein said client application, said database and said
3 search engine are operable a wireless application thus allowing said
4 user to input a query and receive a response to said query via a
5 wireless device.

1 21. A computer system adapted to retrieving information
2 relevant to a query comprising:

3 a processor, and

4 a memory including software instructions adapted to enable the
5 computer system to perform the steps of:

6 accepting a query input by a user via a client application;

7 a database coupled to said client application, said database
8 containing at least one source of information, said source of
9 information having a profile defining at least one knowledgeable area of
10 said source of information; and

11 a search engine for searching said source of information profile
12 for a match wherein when a query input by said user is matched to said

13 knowledgeable area defined in a profile of said source of information
14 profile, said source of information is prompted to provide said user with
15 a response.

16

17 22. The computer system adapted to retrieving information
18 relevant to a query as set forth in claim 21, said source of information is
19 an automated information channel.

1 23. The computer system adapted to retrieving information
2 relevant to a query as set forth in claim 21, wherein said memory
3 further includes software instructions adapted to enable the computer
4 system to match said query with said profile of said source of
5 information, said source of information is prompted with said query so
6 that said source of information can respond to said query.

7

1 24. The computer system adapted to retrieving information
2 relevant to a query as set forth in claim 21, wherein said memory
3 further includes software instructions adapted to enable said client
4 application, said database and said search engine of the computer
5 system to be operable through an Internet.

1 25. The computer system adapted to retrieving information
2 relevant to a query as set forth in claim 21, wherein said memory
3 further includes software instructions adapted to enable said client
4 application, said database and said search engine of the computer
5 system to be operable using a wireless device.

1 26. A computer program product for enabling a computer to
2 retrieve information relevant to a query comprising:

3 software instructions for enabling the computer to perform
4 predetermined operations, and

5 a computer readable medium bearing the software instructions;

6 the predetermined operations including the steps of:

7 accepting a query input by a user using a client application
8 interface;

9 a database coupled to said client application, said database
10 containing at least one source of information, said source of
11 information having a profile defining at least one knowledgeable area of
12 said source of information; and

13 a search engine for searching said source of information profile
14 for a match wherein when a query input by said user is matched to said
15 knowledgeable area defined in a profile of said source of information

16 profile, said source of information is prompted to provide said user with
17 a response.

18

19 27. The computer program product for enabling a computer
20 to retrieve information relevant to a query of claim 26, wherein said
21 source of information is an automated information channel.

22

1 28. A computer system adapted to retrieving information
2 relevant to a query comprising:
3 a processor, and
4 a memory including software instructions adapted to enable the
5 computer system to perform the steps of
6 accepting said desired information input by said user;
7 parsing said query into at least one phrase element;
8 categorizing said phrase element into at least one category
9 using a predefined hierarchical tree of categories;
10 expanding said phrase element and said category into a broader
11 set of words, thus creating a word set, by associating said phrase
12 element and said category with a plurality of synonym phrases and
13 categories;

14 performing a series of search queries wherein at least one of
15 said phrase element, category, and word set are compared to a
16 plurality of words contained in an indexed database; and
17 returning a result when at least one of said phrase element,
18 category or word set matches a word contained in said indexed
19 database.

1 29. The computer system adapted to retrieving information
2 relevant to a query of claim 28, wherein said query is parsed by
3 eliminating a noise word and tagging a word having importance.

1 30. The computer system adapted to retrieving information
2 relevant to a query of claim 28, further comprising a matrix having a
3 column storing database information and a row storing query
4 information wherein an intersection between each column and each
5 row is a single query.

1 31. A computer program product for enabling a computer to
2 retrieve information relevant to a query comprising:
3 software instructions for enabling the computer to perform
4 predetermined operations, and
5 a computer readable medium bearing the software instructions;

6 the predetermined operations is operable to:
7 accepting a query input by a user;
8 parsing said query into at least one phrase element; parsing
9 said query into at least one phrase element;
10 categorizing said phrase element into at least one category
11 using a predefined hierarchical tree of categories;
12 expanding said phrase element and said category into a broader
13 set of words, thus creating a word set, by associating said phrase
14 element and said category with a plurality of synonym phrases and
15 categories;
16 performing a series of search queries wherein at least one of
17 said phrase element, category, and word set are compared to a
18 plurality of words contained in an indexed database; and
19 returning a result when at least one of said phrase element,
20 category or word set matches a word contained in said indexed
21 database.

1 32. The computer program product for enabling a computer
2 to retrieve information relevant to a query of claim 31, wherein said
3 query is parsed by eliminating a noise word and tagging a word having
4 importance.

1 33. The computer program product for enabling a computer
2 to retrieve information relevant to a query of claim 31, further
3 comprising a matrix having a column storing database information and
4 a row storing query information wherein an intersection between each
5 column and row is a single query.

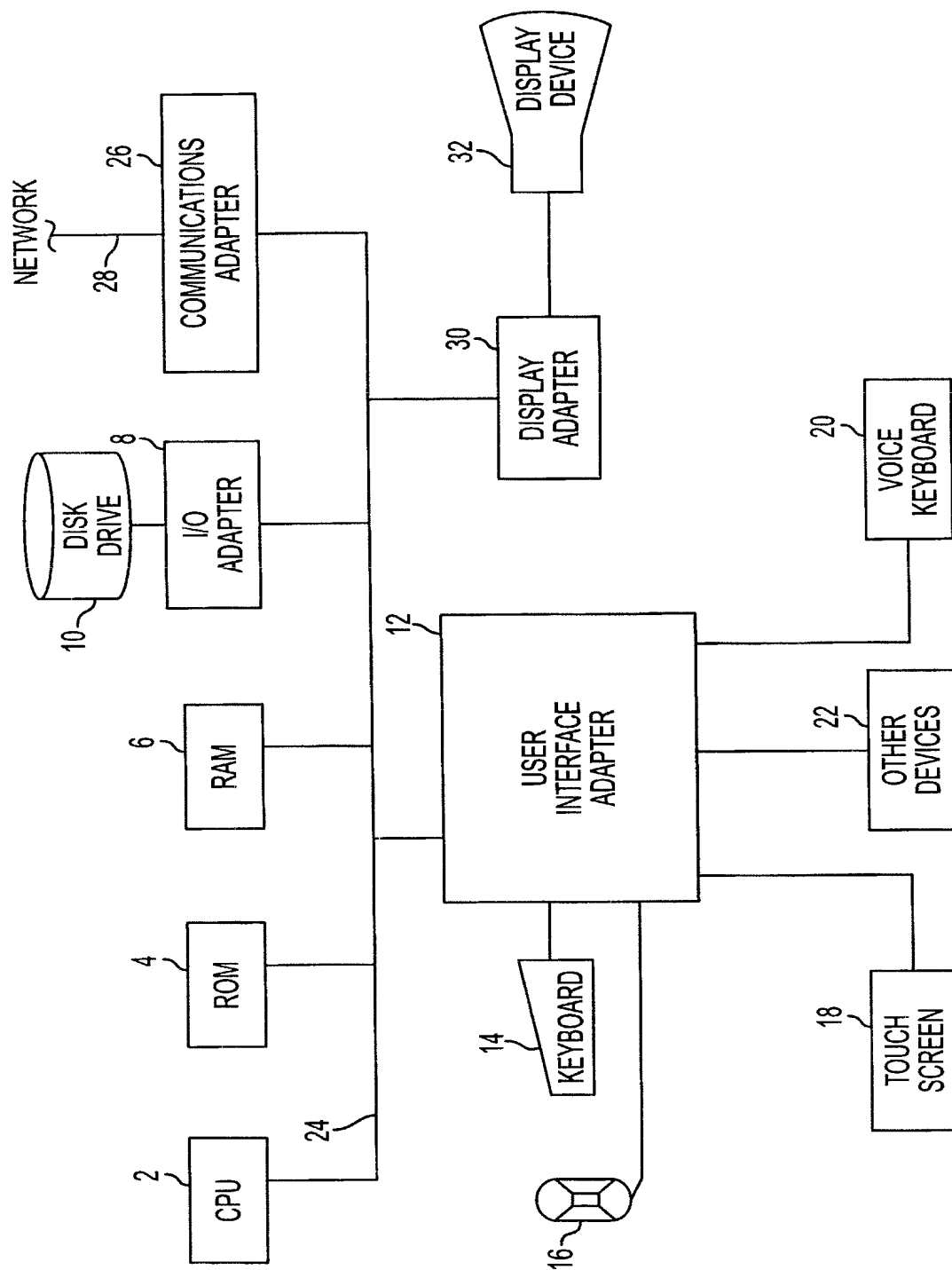


FIG. 1

2/12

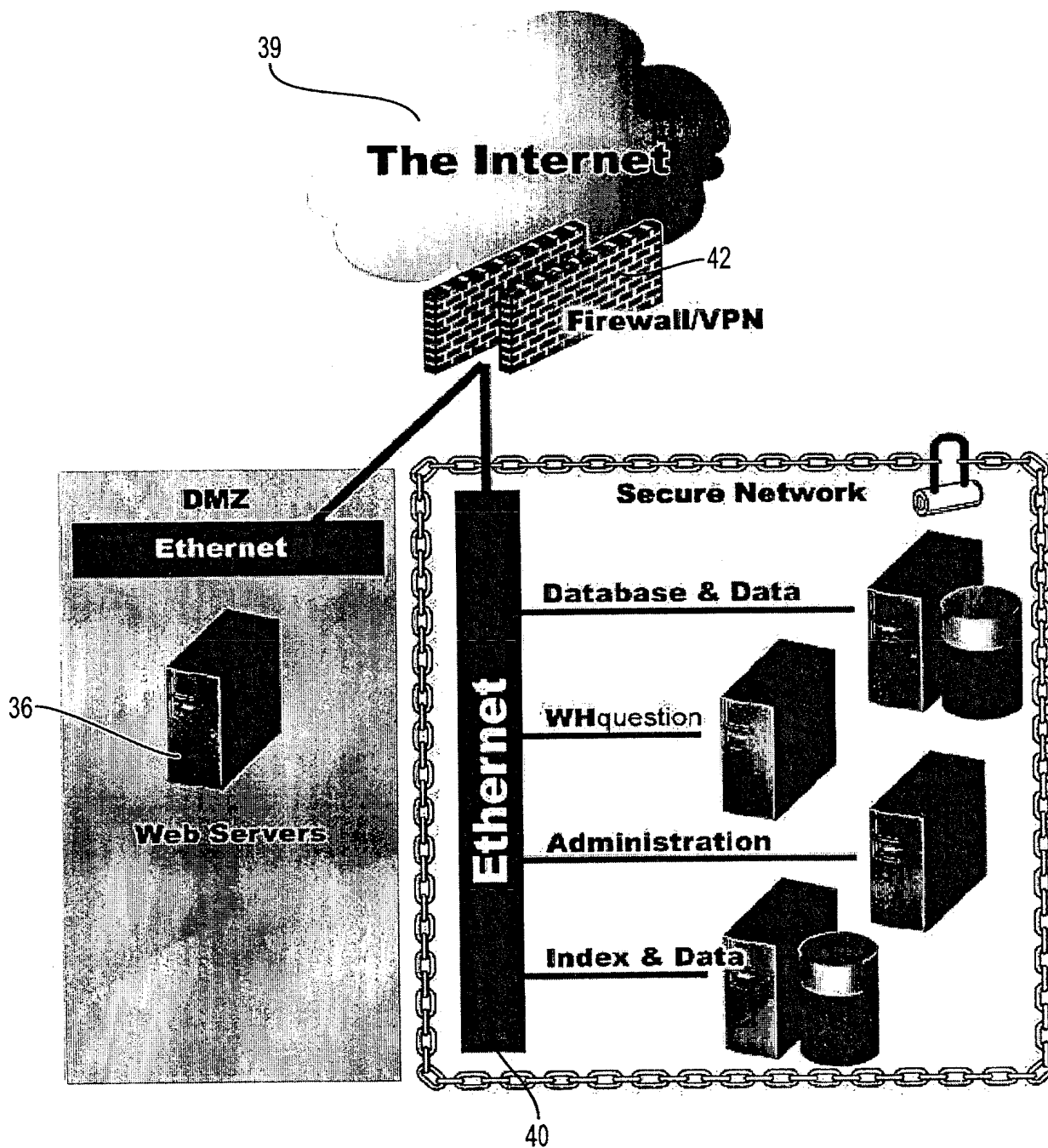


FIG. 2

SUBSTITUTE SHEET (RULE 26)

3/12

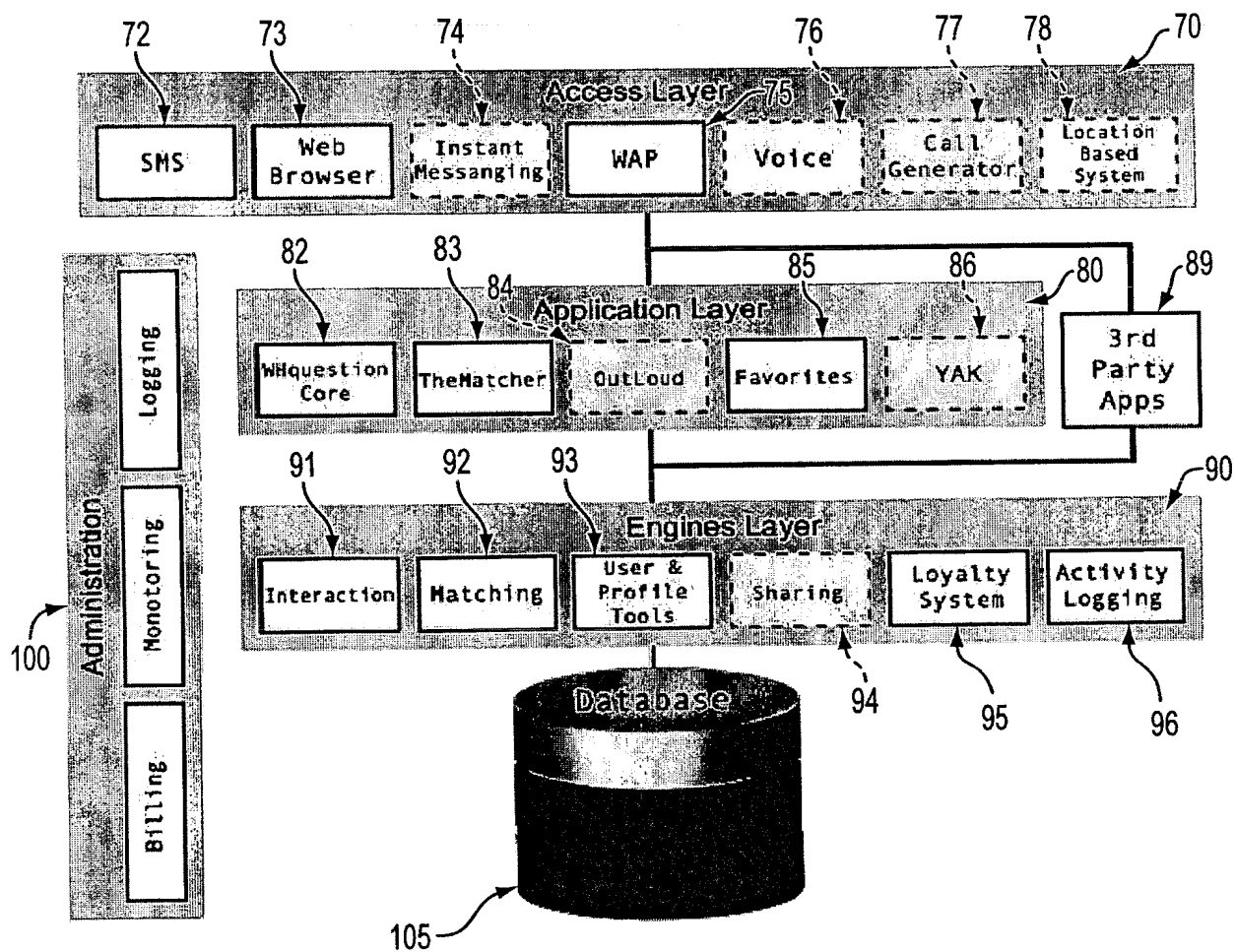


FIG. 3

4/12

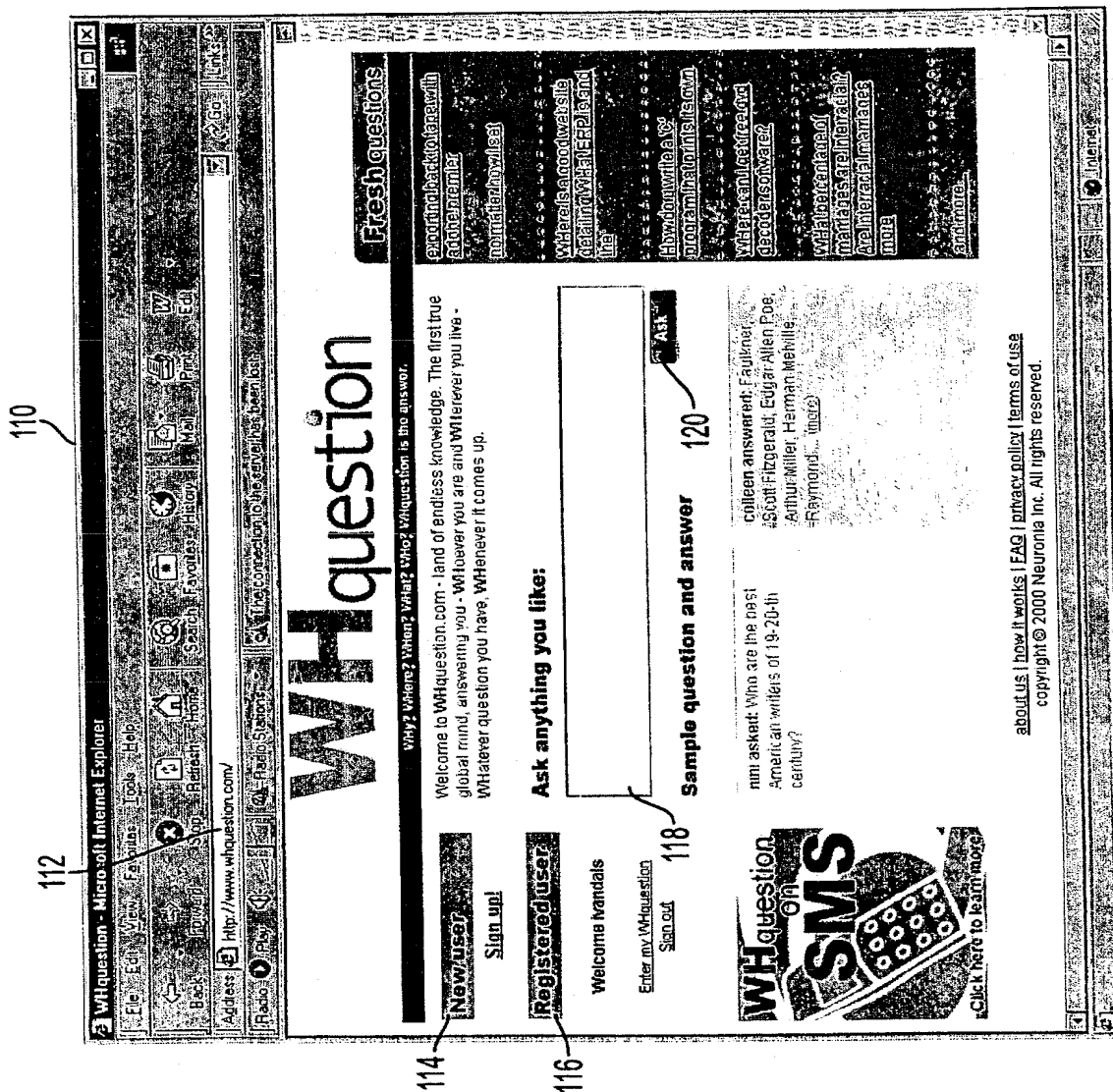


FIG. 4

5/12

110

WHquestion - Expertise - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History

Address <http://www.whquestion.com/main.asp?mode=profileexp®=NE> Go Links

Areas of knowledge

Select knowledge areas for WHich you feel you can supply answers.

| | | |
|---------------------------------|------------------------------------|--------------|
| 122a --- Select category --- | 122b ----- Select subject ----- | 122c more |
| --- Select category --- | ----- Select subject ----- | more |
| --- Select category --- | ----- Select subject ----- | more |
| --- Select category --- | ----- Select subject ----- | more |
| --- Select category --- | ----- Select subject ----- | more |
| --- Select category --- | ----- Select subject ----- | more |
| --- Select category --- | ----- Select subject ----- | more |

Personal Description

In your own words, provide a personal description of yourself.
Include information about your hobbies, experience, education and WHatever
information you find relevant.

123

Done Internet

FIG. 5

6/12

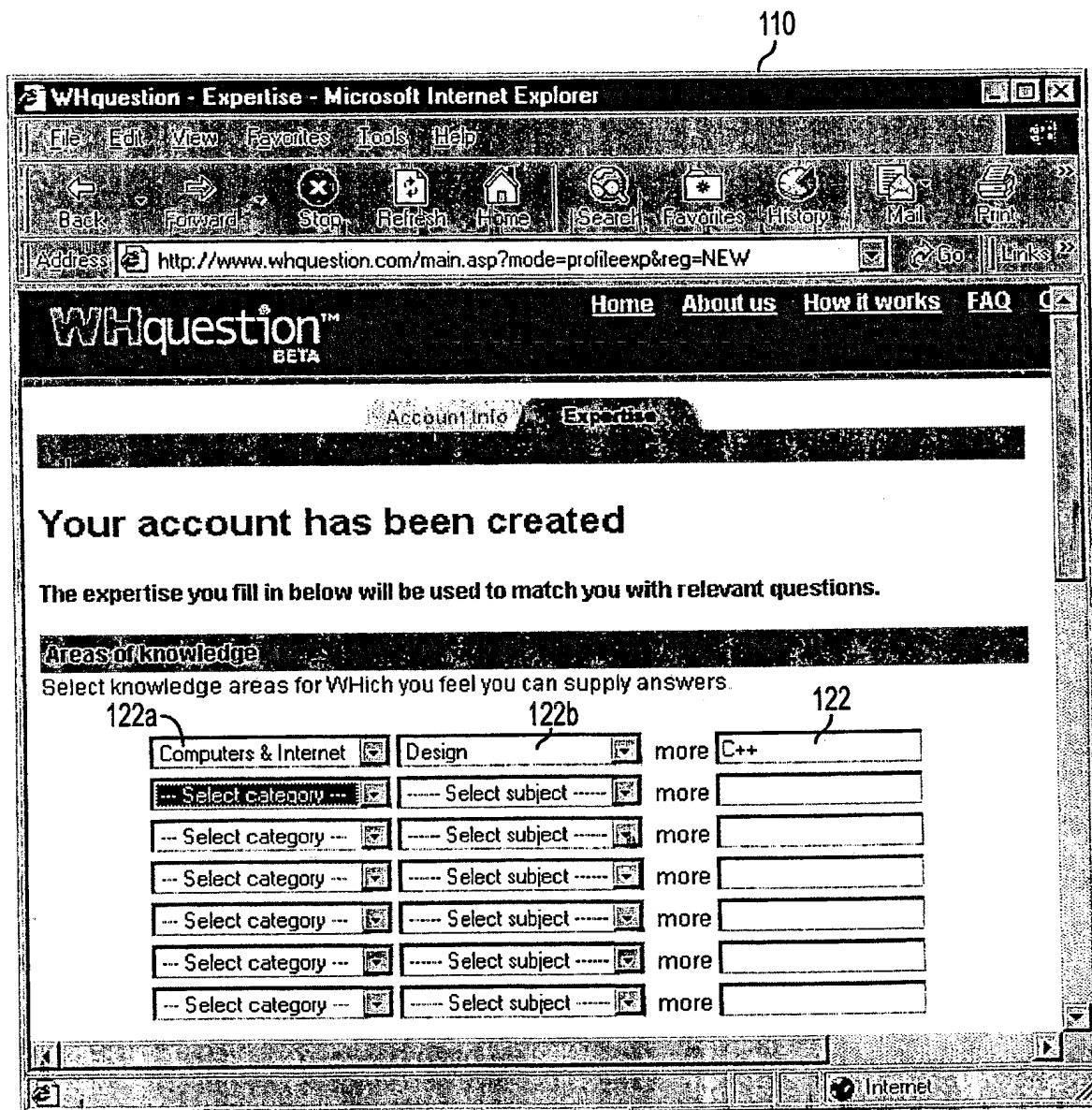


FIG. 6

7/12

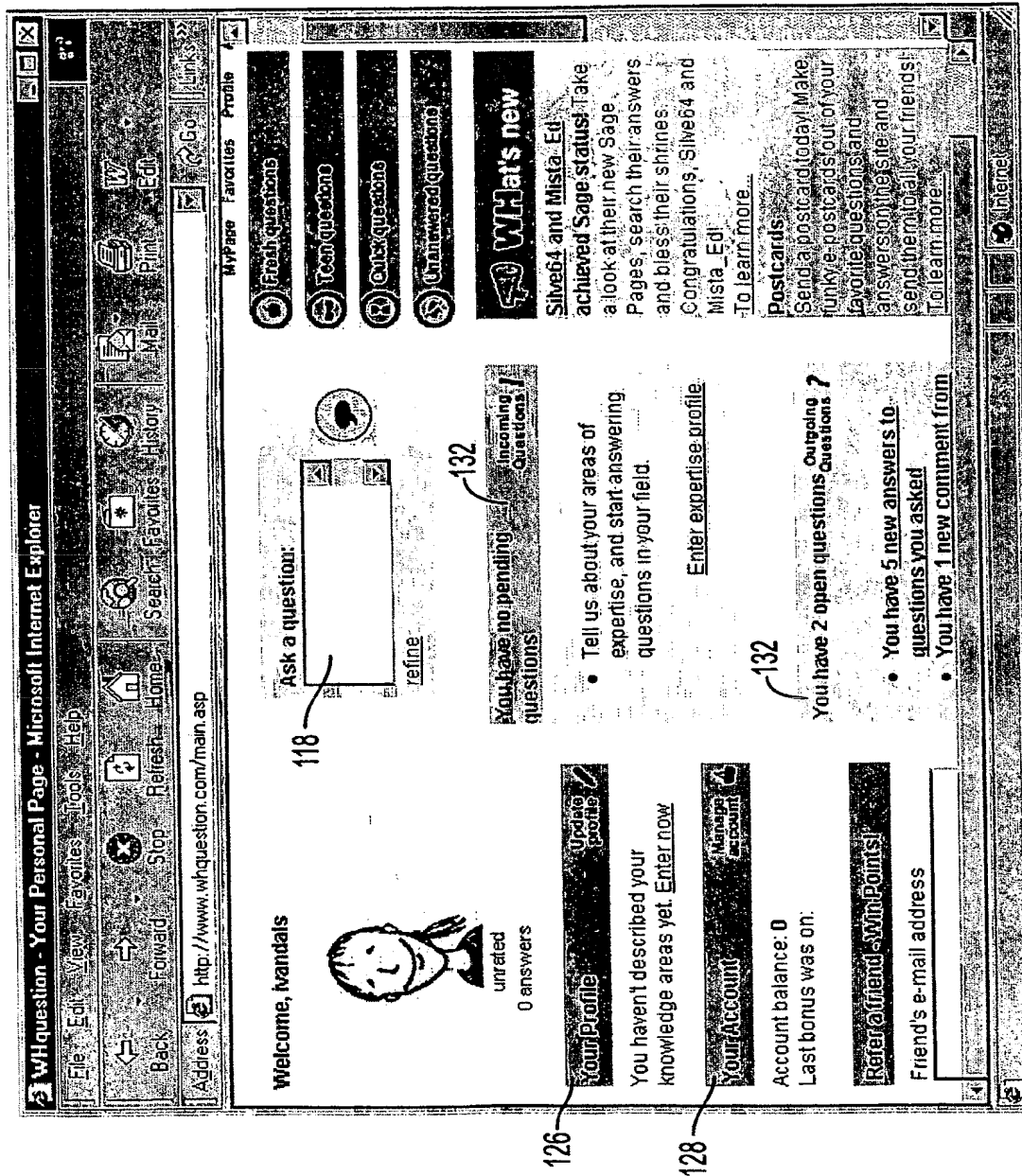


FIG. 7

8/12

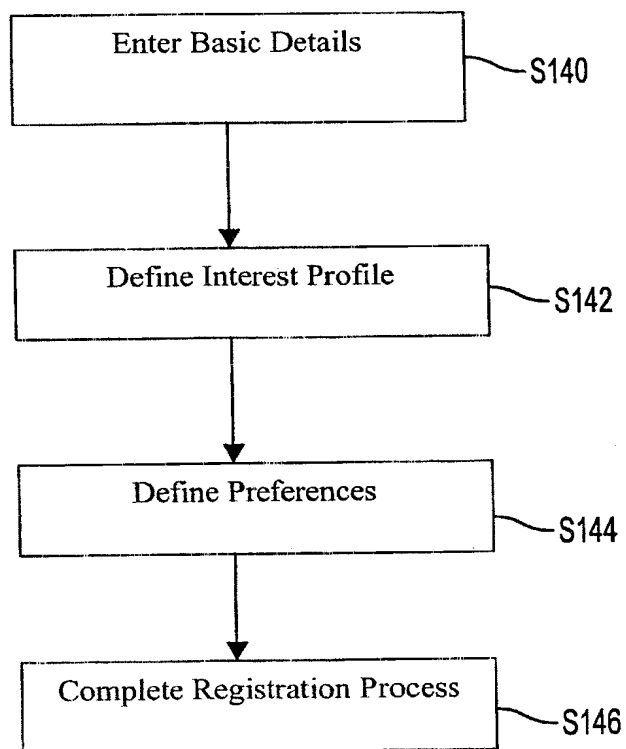


FIG. 8

9/12

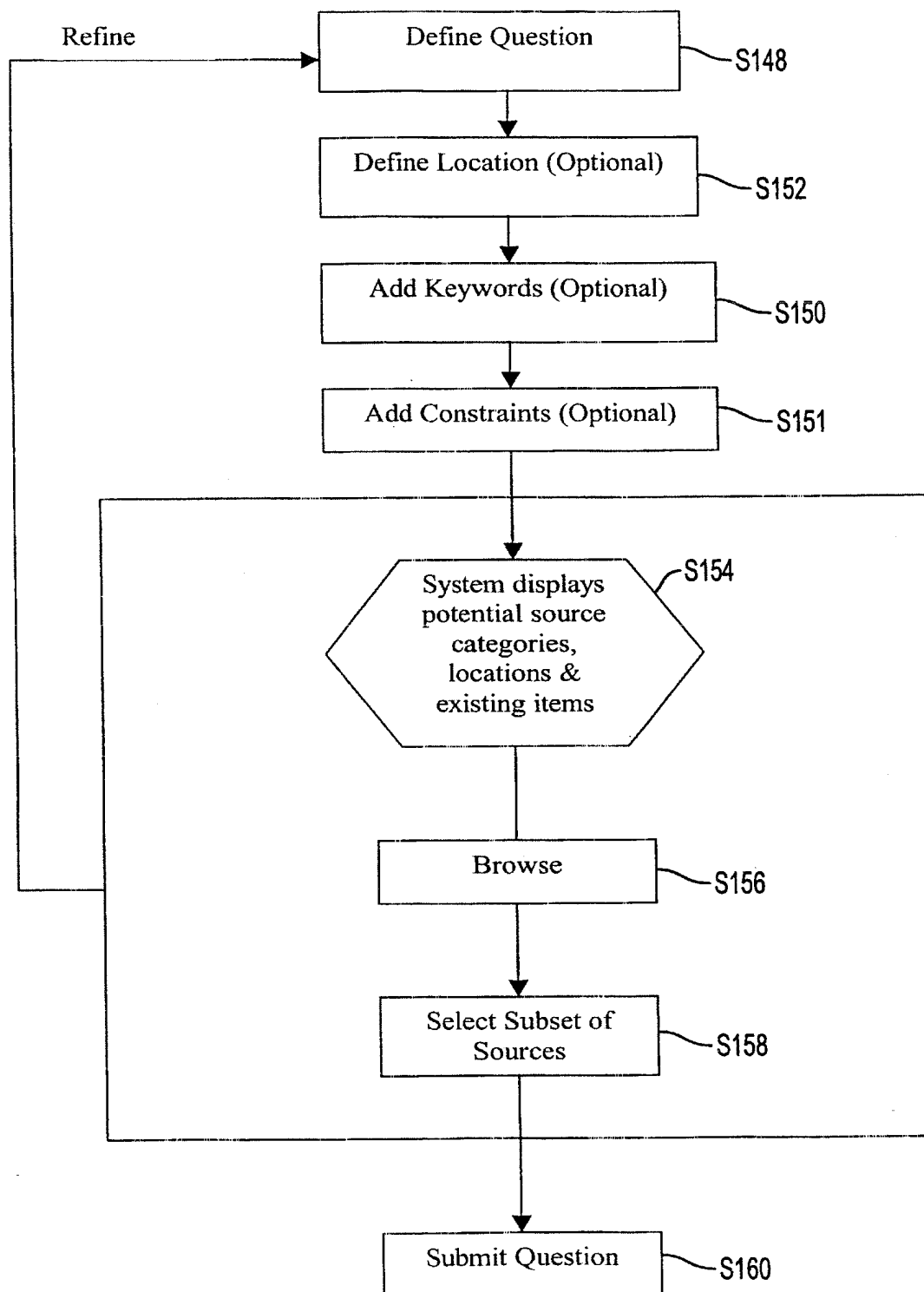


FIG. 9

10/12

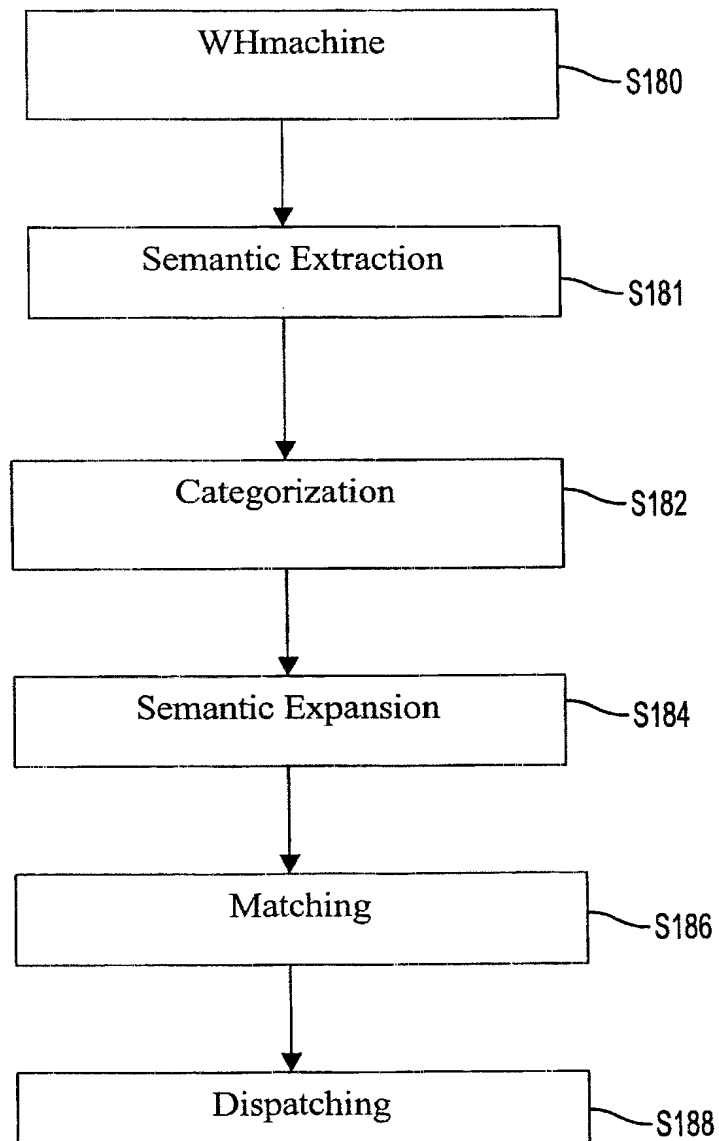


FIG. 10

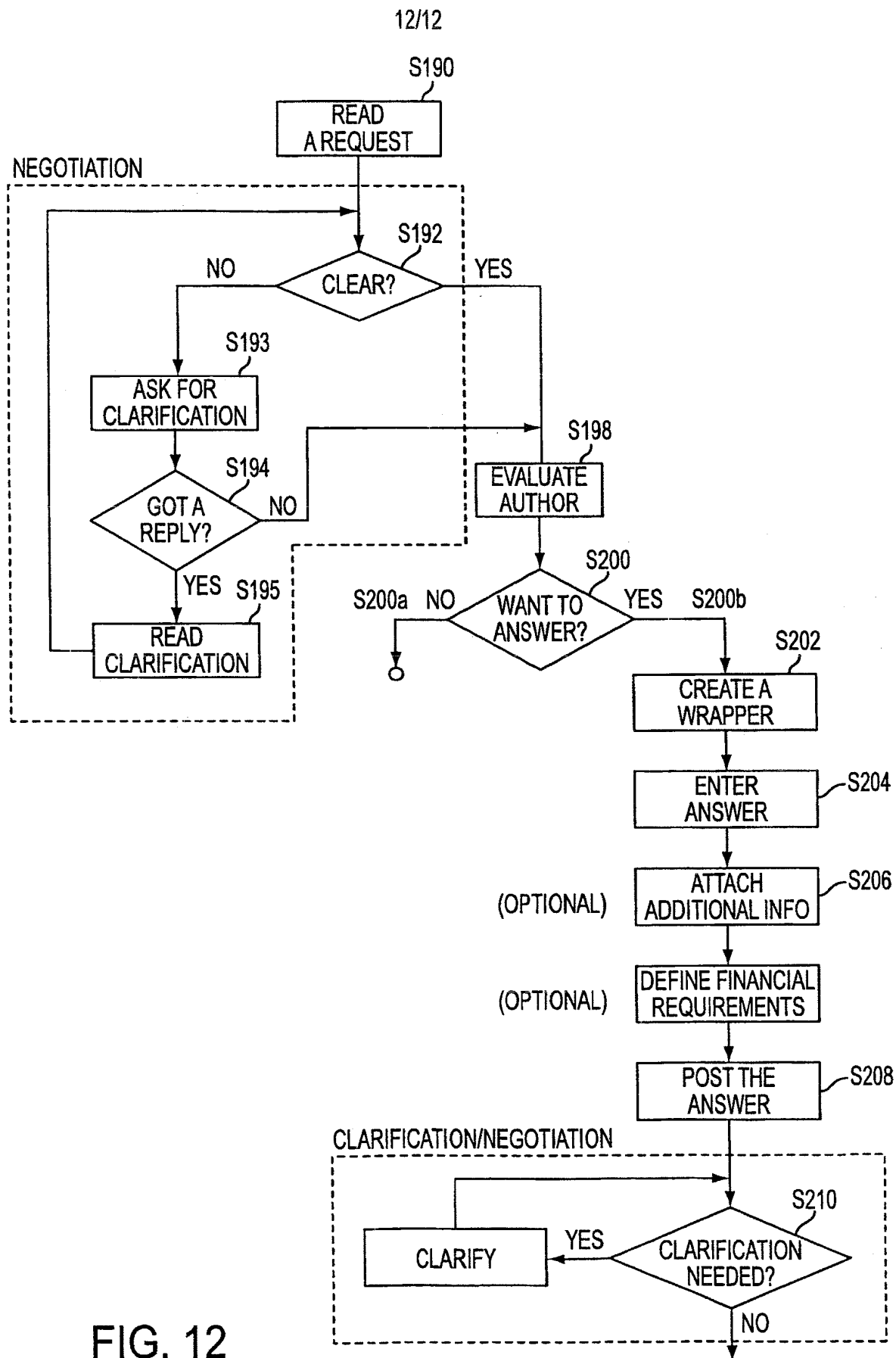
11/12

184

187

| | Query text | categori es | Filtere d terms | Expand ed terms | Location |
|------------------------|---------------|----------------|-----------------------|-----------------------|----------|
| Profile categories | A1 | X | X | X | X |
| Profile description | X | X | X | B4 | X |
| Past answers | X | X | X | X | X |
| Profile locations | X | X | X | X | X |
| User Demographics | X | X | X | X | X |

FIG. 11



(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
26 July 2001 (26.07.2001)

PCT

(10) International Publication Number
WO 2001/053970 A3

(51) International Patent Classification⁷: **G06F 17/30**

(21) International Application Number:
PCT/IB2001/000268

(22) International Filing Date: 24 January 2001 (24.01.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/177,355 24 January 2000 (24.01.2000) US

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **NEURONIA LTD.** [IL/IL]; Rival Street 7, 67778 Tel-Aviv (IL).

Published:
— with international search report

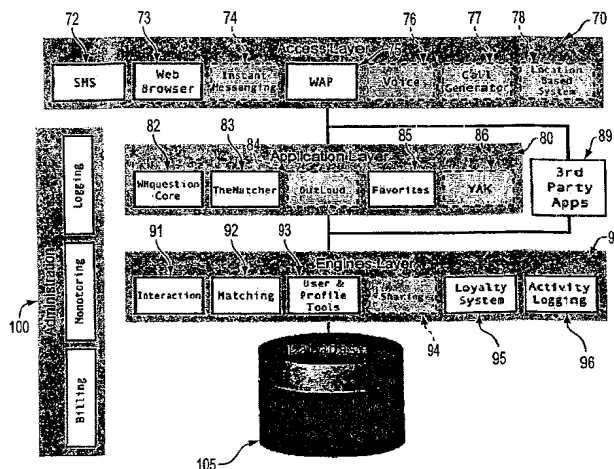
(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **GEVA, Ori** [IL/IL]; Neuron Ltd., Rival Street 7, 67778 Tel-Aviv (IL). **ISH-HURWITZ, Shai** [IL/IL]; Neuron Ltd., Rival Street 7, 67778 Tel-Aviv (IL). **HOCHBERG, Assaf** [IL/IL]; Neuron Ltd., Rival Street 7, 67778 Tel-Aviv (IL).

(88) Date of publication of the international search report:
26 February 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A SYSTEM AND METHOD FOR MATCHING REQUESTS FOR INFORMATION WITH SOURCES THEREOF



(57) Abstract: A platform for mass information exchange by building a content rich virtual community that enables information to be exchanged by matching information seekers with information sources within a chat oriented environment. More specifically, a user searching for specific information is matched with a person who can provide the information or with an automated information channel. The user inputs a query into the system wherein the query is parsed and compared to a database of profiles defining a person or automated information channel as a source of information. When a match is made between a query and a source, the query is transmitted to the identified source. The source then provides a response to the query to the user. The system allows users to reach realms of personal knowledge repositories never before available by accessing the knowledge contained in another's mind, not merely the knowledge physically placed on the Internet.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 01/00268

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X A | US 5 765 033 A (MILOSLAVSKY ALEC) 9 June 1998 (1998-06-09) abstract column 3, line 15 - line 53 column 4, line 20 - column 5, line 48 ----- | 1-12 17,18 |
| X A | US 5 995 961 A (LEVY ALON Y ET AL) 30 November 1999 (1999-11-30) column 3, line 30 - line 52 column 4, line 6 - line 42 column 7, line 6 - line 11 column 10, line 44 - line 48 ----- -/-- | 13-27 3 |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

11 September 2003

Date of mailing of the international search report

05.01.2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Peeters, D.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 01/00268

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | <p>WO 98 26357 A (PRACTICAL APPROACH CORP ;REDFERN DARREN M (CA)) 18 June 1998 (1998-06-18) abstract page 5, line 5 - line 10; figures 1,2 page 9, line 36 - page 10, line 15 -----</p> | 3,10,11 |
| A | <p>WO 98 20435 A (AT & T CORP) 14 May 1998 (1998-05-14) page 1, line 1 - page 2, line 14 page 3, line 3 - page 4, line 2 page 5, line 4 - page 6, line 9 -----</p> | 8,9 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 01/00268

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-27

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-27

A system and computer program product for matching requests for information with information sources.

2. claims: 28-33

A computer system and computer program product for retrieving information relevant to a query, whereby the query is first parsed.

INTERNATIONAL SEARCH REPORT

Information on patent family members

national Application No

PCT/IB 01/00268

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|--|--|
| US 5765033 | A | 09-06-1998 | AU 6319498 A EP 0958560 A1 JP 2000516432 T US 2002101866 A1 US 2003021259 A1 US 6175564 B1 US 2002087648 A1 US 6263066 B1 WO 9835326 A1 US 2003018729 A1 US 2002169834 A1 US 6453341 B1 US 2001001150 A1 | 26-08-1998 24-11-1999 05-12-2000 01-08-2002 30-01-2003 16-01-2001 04-07-2002 17-07-2001 13-08-1998 23-01-2003 14-11-2002 17-09-2002 10-05-2001 |
| US 5995961 | A | 30-11-1999 | NONE | |
| WO 9826357 | A | 18-06-1998 | US 6078914 A AU 5471398 A WO 9826357 A1 | 20-06-2000 03-07-1998 18-06-1998 |
| WO 9820435 | A | 14-05-1998 | US 5909679 A EP 1012748 A1 JP 2001504960 T WO 9820435 A1 US 6026396 A | 01-06-1999 28-06-2000 10-04-2001 14-05-1998 15-02-2000 |